

I CLAIM:

1. In a workstation having a row of processing stages (2) therein, each processing stage incorporating at least one of: (i) a tank of processing fluid, (ii) a load platform designed to receive a basket (1) carrying a workload, and (iii) and an unload platform designed to receive a basket (1) carrying a workload; the workstation further comprising an automated work transfer system to simultaneously convey a number of said baskets to said row of processing stages; the workstation characterized by a mass transfer hoist system comprising:

(a) a supporting rail (4) laterally displaced from said row of processing stages (2) and parallel thereto;

(b) a transfer hoist (3) riding on said supporting rail (4), having one or more substantially vertical shafts which support a beam, also substantially parallel to the row of processing stages, the beam having a length sufficient to accommodate all processing stages within the row of processing stations (2), wherein the beam is provided with a plurality of arms (6) each equipped with an actuated end-effector (7) cantilevered into a potentially corrosive work area, and wherein the plurality of arms (6) is sufficient in number to address the number of processing stages in the row of processing stations (2) as well as the load platform and the unload platform;

(c) a plurality of baskets (1) supported by the arms (6) and actuated end-effectors (7) of the transfer hoist (3) and extending into the work area, wherein the transfer hoist (3) further includes a first drive mechanism to advance the transfer hoist (3) along the rail to a position aligning respective actuated end-effectors (7) with corresponding processing

stages, and a second drive mechanism to at least one of lower and raise the one or more substantially vertical shafts, to at least one of lower and raise the basket (1) held by a respective end-effector, into or out of the tank of a corresponding processing stage.

2. The mass transfer hoist system of claim 1 further comprising a guide rail parallel to the supporting rail (4).

3. The mass transfer hoist system of claim 2, further including a computing mechanism operatively coupled to said first and second drive mechanisms and programmed to cause said mass transfer hoist system to convey said baskets (1) to said stages in a programmed sequence, the baskets (1) at each of a plurality of processing stages (2) being lowered into said tank, and after a programmed dwell time, being raised out of the tank.

4. The mass transfer hoist system of claim 3 wherein said second drive mechanism includes an elevator for supporting the one or more substantially vertical shafts, and an elevator motor to at least one of raise and lower the elevator.

5. The mass transfer hoist system of claim 4 wherein each actuated end-effector (7) corresponds to a respective processing stage, and the actuated end-effectors (7) are controlled so as to cause an engagement of workloads in accordance with a predetermined processing program, and wherein at least one of: (i) one or more arms (6); and (ii) one or more end-effectors are adapted to retract after each workload transfer as specified by said programming sequence.

6. The mass transfer hoist system of claim 5 wherein the computing mechanism is operatively coupled to the actuated end-effectors (7) so as to provide independent control of each actuated end-effector with respect to other actuated end-effectors, in accordance with a programmed sequence, thereby placing some end-effectors into a passive mode, and other end-effectors into an active mode.

7. The mass transfer hoist system of claim 4 wherein the computing mechanism is equipped to determine a substantially optimized transfer sequence in real time based upon workloads requiring varied and differing process times prior to arriving at a specified workload position.